

Appl No. 10/686,233
Amdt. dated September 15, 2005
Reply to Office action of June 15, 2005

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended): An antenna system comprising:
at least one plurality of active antenna elements for sending and receiving a wireless signal;
at least one passive conductive member, having ~~[[an]]~~ edges displaced from and substantially directed toward the ~~at least one~~ plurality of active antenna elements, and cooperating therewith to establish a plurality of hemispherical beam patterns.
2. (Canceled):
3. (Currently Amended): The antenna system of claim 1 wherein the ~~at least one~~ plurality of active antenna elements ~~comprises a plurality of antenna elements, are~~ disposed respectively along the periphery of the at least one conductive member, and cooperating therewith to establish a respective plurality of hemispherical beam patterns.
4. (Original): The antenna system of claim 3 wherein a first portion of antenna elements are adapted to operate over a first wireless frequency band, and wherein a second portion of antenna elements are adapted to operate over a second wireless frequency band.
5. (Original): The antenna system of claim 4 wherein the first and second wireless frequency bands are 2.4 GHz and 5 GHz wireless bands.
6. (Original): The antenna system of claim 1 wherein the at least one conductive member comprises a plurality of non-intersecting conductive members wherein each conductive member is associated with at least one antenna element.

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7. (Original): The antenna system of claim 6 wherein the plurality of conductive members comprise first and second conductive members, located at a substantially perpendicular angle.
8. (Original): The antenna system of claim 7 wherein each conductive member is associated with a pair of antenna elements, disposed at respective opposite ends of the respective conductive member.
9. (Original): The antenna system of claim 8 wherein the pair of antenna elements associated with the first conductive member are adapted to operate in a first wireless frequency band and the pair of antenna elements associated with the second conductive member are adapted to operate in a second wireless frequency band.
10. (Original): The antenna system of claim 9 wherein the first and second wireless frequency bands are 2.4 GHz and 5 GHz wireless bands.
11. (Original): The antenna system of claim 1 wherein the at least one conductive member comprises a single planar element, substantially coplanar with the at least one antenna element.
12. (Original): The antenna system of claim 1 wherein the at least one conductive member comprises a plurality of planar elements, substantially coplanar with the at least one antenna element.
13. (Original): The antenna system of claim 1 wherein the at least one conductive member comprises a substantially angled member.
14. (Original): The antenna system of claim 13 wherein the substantially contoured member is an angled member having a vertex edge substantially directed toward the at least one antenna element.

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15. (Original): The antenna system of claim 1 further comprising a sandwich module for providing a further level of antenna isolation.

16. (Original): The antenna system of claim 15 wherein the sandwich module comprises metal plates that substantially face the at least one conductive member at a perpendicular angle.

17. (Original): The antenna system of claim 15 where the sandwich module comprises a separation material having RF isolating properties, for providing a further level of antenna isolation.

18. (Original): The antenna system of claim 1 wherein the at least one antenna element is a dipole antenna and the at least one conductive member is at least one discrete component.

19. (Original): The antenna system of claim 1 wherein the at least one antenna element and at least one conductive member are formed on a single piece of circuit board material.

20. (Original): The antenna system of claim 1 wherein the antenna element is shorter than the respective edge of the conductive member.

21. (Currently Amended): A wireless device comprising:

a radio transceiver comprising a plurality of radio components for processing a wireless signal;

~~at least one~~ plurality of active antenna elements for sending and receiving a wireless signal;

at least one passive conductive member, having ~~[[an]]~~ edges displaced from and substantially directed toward the ~~at least one~~ plurality of active antenna elements, and cooperating therewith to establish a plurality of hemispherical beam patterns for the wireless signal.

Claim 22 (canceled)

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23. (Currently Amended): The wireless device of claim 21 wherein the ~~at least one plurality of~~ active antenna elements ~~comprises a plurality of antenna elements,~~ are disposed respectively along the periphery of the at least one conductive member, and cooperating therewith to establish a respective plurality of hemispherical beam patterns.

24. (Original): The wireless device of claim 21 wherein a first portion of antenna elements are adapted to operate over a first wireless frequency band, and wherein a second portion of antenna elements are adapted to operate over a second wireless frequency band.

25. (Original): The wireless device of claim 24 wherein the first and second wireless frequency bands are 2.4 GHz and 5 GHz wireless bands.

26. (Original): The wireless device of claim 21 wherein the at least one conductive member comprises a plurality of non-intersecting conductive members wherein each conductive member is associated with at least one antenna element.

27. (Original): The wireless device of claim 26 wherein the plurality of conductive members comprise first and second conductive members, located at a substantially perpendicular angle.

28. (Original): The wireless device of claim 27 wherein each conductive member is associated with a pair of antenna elements, disposed at respective opposite ends of the respective conductive member.

29. (Original): The wireless device of claim 28 wherein the pair antenna elements associated with the first conductive member are adapted to operate on a first wireless frequency band and the pair of antenna elements associated with the second conductive member are adapted to operate on a second wireless frequency band.

30. (Original): The wireless device of claim 29 wherein the first and second wireless frequency bands are 2.4 GHz and 5 GHz wireless bands.

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31. (Original): The wireless device of claim 21 wherein the at least one conductive member comprises a single planar element, substantially coplanar with the at least one antenna element.
32. (Original): The wireless device of claim 21 wherein the at least one conductive member comprises a plurality of planar elements, substantially coplanar with the at least one antenna element.
33. (Original): The wireless device of claim 21 wherein the at least one conductive member comprises a substantially angled member.
34. (Original): The wireless device of claim 33 wherein the substantially contoured member is an angled member having a vertex edge substantially directed toward the at least one antenna element.
- ~~33~~35. (Currently Amended): The wireless device of claim 21 further comprising a sandwich module for providing a further level of antenna isolation.
- ~~34~~36. (Currently Amended): The wireless device of claim 33 wherein the sandwich module comprises metal plates that substantially face the at least one conductive member at a perpendicular angle.
- ~~35~~37. (Currently Amended): The wireless device of claim 33 where the sandwich module comprises a separation material having RF isolating properties, for providing a further level of antenna isolation.
- ~~36~~38. (Currently Amended): The wireless device of claim 21 wherein the at least one antenna element is a dipole antenna and the at least one conductive member is at least one discrete component.

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3739. (Currently Amended): The wireless device of claim 21 wherein the at least one antenna element and the at least one conductive member are formed on a single piece of circuit board material.

3840. (Currently Amended): The wireless device of claim 21 wherein the antenna element is shorter than the respective edge of the conductive member.

41. (New) An antenna system comprising:

at least one antenna element for sending and receiving a wireless signal; and

at least one conductive member, having an edge displaced from and substantially directed toward the at least one antenna element, and cooperating therewith to establish a hemispherical beam pattern;

wherein the at least one conductive member comprises a plurality of non-intersecting conductive members wherein each conductive member is associated with at least one antenna element.

42. (New): The antenna system of claim 41 wherein the plurality of conductive members comprise first and second conductive members, located at a substantially perpendicular angle.

43. (New): The antenna system of claim 42 wherein each conductive member is associated with a pair of antenna elements, disposed at respective opposite ends of the respective conductive member.

44. (New): The antenna system of claim 43 wherein the pair of antenna elements associated with the first conductive member are adapted to operate in a first wireless frequency band and the pair of antenna elements associated with the second conductive member are adapted to operate in a second wireless frequency band.

45. (New): The antenna system of claim 44 wherein the first and second wireless frequency bands are 2.4 GHz and 5 GHz wireless bands.

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46. (New): An antenna system comprising:

- at least one antenna element for sending and receiving a wireless signal; and
- at least one conductive member, having an edge displaced from and substantially directed toward the at least one antenna element, and cooperating therewith to establish a hemispherical beam pattern;

- wherein the at least one conductive member comprises a substantially angled member.

47. (New): The antenna system of claim 46 wherein the substantially contoured member is an angled member having a vertex edge substantially directed toward the at least one antenna element.

48. (New): An antenna system comprising:

- at least one antenna element for sending and receiving a wireless signal;
- at least one conductive member, having an edge displaced from and substantially directed toward the at least one antenna element, and cooperating therewith to establish a hemispherical beam pattern; and

- a sandwich module for providing a further level of antenna isolation.

49. (New): The antenna system of claim 48 wherein the sandwich module comprises metal plates that substantially face the at least one conductive member at a perpendicular angle.

50. (New): The antenna system of claim 49 where the sandwich module comprises a separation material having RF isolating properties, for providing a further level of antenna isolation.

51. (New): An antenna system comprising:

- at least one antenna element for sending and receiving a wireless signal; and
- at least one conductive member, having an edge displaced from and substantially directed toward the at least one antenna element, and cooperating therewith to establish a hemispherical beam pattern;

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wherein the antenna element is shorter than the respective edge of the conductive member.

52. (New): A wireless device comprising:

a radio transceiver comprising a plurality of radio components for processing a wireless signal;

at least one antenna element for sending and receiving a wireless signal; and

at least one conductive member, having an edge displaced from and substantially directed toward the at least one antenna element, and cooperating therewith to establish a hemispherical beam pattern for the wireless signal;

wherein the at least one conductive member comprises a plurality of non-intersecting conductive members wherein each conductive member is associated with at least one antenna element.

53. (New): The wireless device of claim 52 wherein the plurality of conductive members comprise first and second conductive members, located at a substantially perpendicular angle.

54. (New): The wireless device of claim 53 wherein each conductive member is associated with a pair of antenna elements, disposed at respective opposite ends of the respective conductive member.

55. (New): The wireless device of claim 54 wherein the pair antenna elements associated with the first conductive member are adapted to operate on a first wireless frequency band and the pair of antenna elements associated with the second conductive member are adapted to operate on a second wireless frequency band.

56. (New): The wireless device of claim 55 wherein the first and second wireless frequency bands are 2.4 GHz and 5 GHz wireless bands.

57. (New): A wireless device comprising:

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a radio transceiver comprising a plurality of radio components for processing a wireless signal;
at least one antenna element for sending and receiving a wireless signal; and
at least one conductive member, having an edge displaced from and substantially directed toward the at least one antenna element, and cooperating therewith to establish a hemispherical beam pattern for the wireless signal;
wherein the at least one conductive member comprises a substantially angled member.

58. (New): The wireless device of claim 57 wherein the substantially contoured member is an angled member having a vertex edge substantially directed toward the at least one antenna element.

59. (New): A wireless device comprising:

a radio transceiver comprising a plurality of radio components for processing a wireless signal;
at least one antenna element for sending and receiving a wireless signal;
at least one conductive member, having an edge displaced from and substantially directed toward the at least one antenna element, and cooperating therewith to establish a hemispherical beam pattern for the wireless signal; and
a sandwich module for providing a further level of antenna isolation.

60. (New): The wireless device of claim 59 wherein the sandwich module comprises metal plates that substantially face the at least one conductive member at a perpendicular angle.

61. (New): The wireless device of claim 59 where the sandwich module comprises a separation material having RF isolating properties, for providing a further level of antenna isolation.

62. (New): A wireless device comprising:

a radio transceiver comprising a plurality of radio components for processing a wireless signal;

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at least one antenna element for sending and receiving a wireless signal; and
at least one conductive member, having an edge displaced from and substantially directed
toward the at least one antenna element, and cooperating therewith to establish a hemispherical
beam pattern for the wireless signal;
wherein the antenna element is shorter than the respective edge of the conductive
member.